REMARKS

This is a response to the Office Action dated October 12, 2004 in the above-referenced

patent application. Claims 1-16 are pending in the above-referenced patent application. Claims

1, 3, 6-10 and 16 were rejected under 35 U.S.C. 102(e) as being anticipated by US 2002/0027610

to Jiang et al. ("Jiang"). Claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable

over Jiang. Claims 2, 4, 5, 11-13 and 15 were deemed allowable if rewritten in independent form

including limitations of base claims and all intervening claims. Applicant wishes to thank the

Examiner for detailing the allowable claims.

Rejection of Claims 1, 3, 6-10 and 16 under 35 U.S.C. 102(e)

Rejection of Claims 1, 3, 6-10 and 16 under 35 U.S.C. 102(e) as being anticipated by

Jiang is respectfully traversed because, for at least the following reasons, Jiang does not disclose

all of the claimed limitations.

As per Claim 1, despite the Patent Office's interpretation, Jiang's motion detector 109

does not disclose:

> "comparing mutually corresponding fields and defining a point-wise non-
>
> recursive motion decision parameter indicating motion at a given point between a
>
> previous field and a next field in the video sequence;
>
> computing a recursive motion decision parameter by combining the non-recursive
>
> motion decision parameter with a motion decision parameter of at least one

associated previous field," as required by Claim 1.

The Patent Office interprets the motion detector 109 of Jiang as disclosing the claimed limitation. Applicant respectfully traverses such interpretation.

On page 3 of the Office Action the Patent Office only focuses on linguistics of recursive and non-recursive, without addressing the substantive differences between Jiang and the claimed invention presented by Applicant. he Patent Office has not met its burden. If Claim 1 is once rejected, Applicant respectfully requests that the Patent Office address said substantive differences presented by Applicant, and issue a non-final action such that Applicant can respond.

The claimed invention and Jiang are patentably distinct. On page 2, paragraph 27, Jiang describes the motion detector 109 in calculating the motion metrics for a missing pixel as follows:

> "Motion detector 109 actually filters the pixel luminance value differences from
>
> pixel difference unit 107 to remove aliases occurring under motion conditions.
>
> Moreover, it should be noted that all the pixel luminance value differences noted
>
> above might not be used in determining the motion of the missing pixel. **The**
>
> **motion metric Δ at a missing pixel may be defined by employing some**
>
> **combination of the obtained pixel luminance value differences,** for example,
>
> by $\Delta = \max(\Delta_c, \Delta_a)$. Other combinations of the pixel luminance value differences

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may also be used to obtain the motion metric at the missing pixel, for example, $\Delta=\max(\Delta_c, \min(\Delta_n, \Delta_s))$, is employed in motion detector 109 in this implementation. Note that the use of $\min(\Delta_n, \Delta_s)$ reduces the spreading of spurious motion in a vertical direction of the image. It is also important to note that our implementation is significantly simplified because **the motion values are computed directly from the pixel luminance value differences employing the minimum and maximum value choices.**" (emphasis added).

Therefore, Jiang calculates the motion metrics for a missing pixel by first obtaining **pixel luminance value differences** such as Δ_c, Δ_a and then obtaining a motion metric Δ for the missing pixel from a **combination of the luminance value differences**. In contrast to the claimed invention, the **motion metrics** of previous fields are not used by Jiang for computing the motion metric Δ for a missing pixel. Jiang does not disclose computing a motion decision parameter by combining the motion decision parameter Δ of the missing pixel with a motion decision parameter of at least one associated previous field, as required by Claim 1. In Jiang, for computing the motion metric Δ for the missing pixel, the **luminance value differences** (e.g., Δ_c, Δ_a, Δ_n, Δ_s) are used, _not_ the **motion metrics** of any previous fields, as claimed. For at least these reasons, rejection of Claim 1 should be withdrawn.

Claim 6 includes limitations of Claim 1, and further limitations, not disclosed by Jiang and is therefore allowable for at least the reasons provided in relation to Claim 1.

As per Claim 7, despite the Patent Office's interpretation, Jiang, paragraph 42, does not disclose: "varying the motion decision value between 0 and 1 as a function of an estimate of the degree of motion at the given location and, upon estimating a high degree of motion, heavily weighting the output signal towards the spatially interpolated signal and, upon estimating a low degree of motion, heavily weighting the output signal towards the temporally interpolated signal," as required by Claim 7.

The blending factor in Jiang is not the same as the motion decision value as claimed. The Patent Office has not met its burden in showing that Jiang's blending factor is the same as the motion decision value as claimed. If Claim 7 is one again rejected, Applicant respectfully requests the Examiner to specifically support the interpretation that Jiang's blending factor is the same as the motion decision value as claimed.

Jiang shows the motion metric values varying between 0 and 8, not between 0 and 1, as claimed. In addition, as claimed, upon estimating a high degree of motion (e.g., motion decision close to 1), the output signal is heavily weighted towards the spatially interpolated signal, and upon estimating a low degree of motion (e.g., motion decision close to 0), the output signal is heavily weighted towards the temporally interpolated signal. By contrast, the blending factor in Jiang has the values of 0 for motion metric values 0, 1, 2 and 3.

Fig. 5 in Jiang (relied on by the Examiner) is explained in Paras 40 and 41 as a graphical representation of a look up table including blending factors that may be used in the interpolation. The look up table is represented as a stretched sinusoidal curve, where the blending factor has 8-bit values. Jiang states that the curve shown in Fig. 5 has significant effects on the quality of the de-interlaced images. Shifting the curve to the left causes more pixels to be interpolated based on field, and therefore reducing aliasing. On the other hand, shifting the curve to the right may increase aliasing. The look up table of Fig. 5 yields the blending factor based on the supplied median motion metric output from spatial median filter 110. Then, the blending factors are supplied to the blender 112.

It is respectfully submitted that there is no disclosure of the claimed limitations in Fig. 5 or corresponding description in Jiang as the Examiner interprets. If Claim 7 is one again rejected, Application respectfully requests the Examine to specifically support the interpretation that Jiang's Fig. 5 discloses any of the claimed limitations. Further, in paragraph 43, Jiang states that any motion metric value of less than 4 yields a blending factor of 0 and any motion metric value of 8 or more yields a blending factor 1. For at least these reasons, rejection of Claims 7-8 should be withdrawn.

Claim 9 was rejected for similar reasons as Claim 1, and therefore should be allowed for at least the reasons provided in relation to Claim 1.

Claim 16 includes limitations of Claim 9, and further limitations, not disclosed by Jiang

and is therefore allowable for at least the reasons provided in relation to Claim 9.

Rejection of Claim 14 under 35 U.S.C. 103(a)

Rejection of Claim 14 under 35 U.S.C. 103(a) as being unpatenable over Jiang in view of

Gowda is respectfully traversed because not all of the limitations of the claim are disclosed or

suggested by Jiang and Gowda, alone or in combination.

As per Claim 14, as the Patent Office also states, Jiang does not disclose a low-pass filter

connected to the output of the recursive motion detection unit to for low-pass filtering the

recursive motion detection parameter, as required by Claim 14. Jiang does not disclose all of the

limitations of Claim 9 on which Claim 14 depends. Clearly then, Jiang cannot, and does not

disclose, low-pass filtering the recursive motion detection parameter before output. There is no

such component in Jiang. The Patent Office has summarily deciding that the claimed limitation

is obvious, and a matter of design choice, without meeting its burden. No prima facie case of

obviousness has been established. Further, unlike the claimed invention, Gowda is directed to a

digital automatic gain control circuit for image system. In col. 3, lines 10-21 (relied on by the

Examiner), Gowda mentions an optional low pass filter 112 for the DAC 110 in Fig. 1. This has

nothing to do with the claimed limitation of low-pass filtering the recursive motion decision

parameter output of the recursive motion detection unit, as claimed.

There is no suggestion in Jiang to modify it according to Gowda as the Patent Office does. It is well settled that in order for a modification or combination of the prior art to be valid, the prior art itself must suggest the modification or combination, "...invention cannot be found obvious unless there was some **explicit** teaching or suggestion in the art to motivate one of ordinary skill to combine elements so as to create the same invention." *Winner International Royalty Corp. v. Wang*, No. 96-2107, 48 USPQ.2d 1139, 1140 (D.C.D.C. 1998) (emphasis added). "The prior art **must provide** one of ordinary skill in the art the **motivation** to make the proposed molecular modifications needed to arrive at the claimed compound." *In re Jones*, 958 F.2d 347, 21 USPQ.2d 1941, 1944 (Fed. Cir. 1992) (emphasis added).

Jiang does not suggest the motivation to modify it as proposed. Jiang and Gowda are individually complete and functionally independent for their limited specific purposes and there would be no reason to make the modification proposed by the Patent Office. Therefore, because Jiang does not suggest the modification proposed by the Patent Office the modifications is improper. The LPF 108 in Jiang has nothing to do with low-pass filtering the recursive motion decision parameter prior to the outputting step, as claimed. Further, it is respectfully submitted that the Patent Office is improperly using "hindsight" and the teachings of Applicant's own claimed invention in order to modify Jiang to render Applicants' claims obvious. For at least these reasons, rejection of Claim 14 should be withdrawn.

Conclusion

For these and other reasons, it is respectfully submitted that the rejection of the rejected claims should be withdrawn, and all of the claims be allowed. Accordingly, reexamination, reconsideration and allowance of all the claims are respectfully requested.

If necessary, the Commissioner is hereby authorized to charge payment or credit any overpayment to Deposit Account No. 01-1960 for any additional fees required in connection with this filing.

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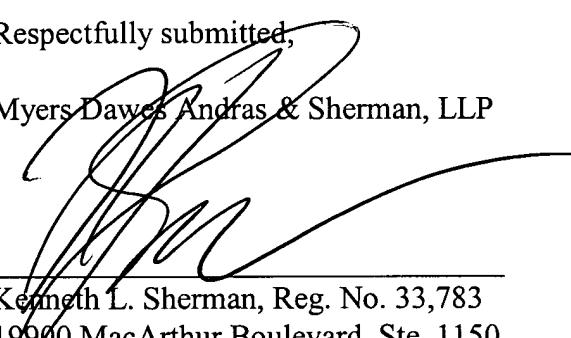
January 12, 2005 .

By: Susan Langworthy

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Respectfully submitted,

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